

ABSTRACT

A resource catalog system comprises a catalog organized as a set of metadata structures representing distributed system resources, language for resource invocation, and a query interpreter and optimizer. Query optimization includes dynamic functional
5 composition by modeling resources according constraints and determining constraint-satisfaction to compose an execution plan. Query optimization may also include dynamic selection and scheduling of resources by combining a resource scheduling with adaptive feedback. The resources may comprise distributed software components, application programs, shell scripts, executables, and services. The resource catalog system accepts
10 queries for operations on distributed resources through a declarative language or a procedural language. A query optimizer derives catalog operators from a query or elsewhere and accesses the system resources according to interpretation of the catalog operators. The optimizer also retrieves information concerning the location and/or physical interfaces of the system resources to fulfill the commands specified by the catalog operators.